UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/632,867 | 08/04/2000 | Lawrence W. Yonge III | 04838-061001 | 2453 |

26161 7590 10/06/2004

FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

| EXAMINER | |
|---|---|
| VOLPER, THOMAS E | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2665 | |

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/632,867 | YONGE ET AL. | |
| | Examiner | Art Unit | |
| | Thomas Volper | 2665 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15 and 17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1, 9, 10 and 15 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-9, 15, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al. (US 5,914,959) in view of Kaiser et al. (US 6,188,717) and Jalali (US 6,778,507).

Regarding claims 1, 9, 15 and 20, Marchetto discloses adapting a connection between a transmitter and a receiver to a data rate for each carrier of the channel based on characteristics of each carrier of the channel for the connection (col. 1, line 57 – col. 2, line 28). Marchetto fails to expressly disclose transmitting data across a plurality of different connections between any of a plurality of transmitters and any of a plurality of receivers, and that the data rate established for at least some carriers differs from the data rate established for at least some other carriers. Kaiser discloses a multi-carrier wireless communication system that permits variable data rates for each individual subscriber (col. 5, line 66 – col. 6, line 10). Kaiser discloses the need to

transmit audio, video, text data, etc. as a motivation for providing variable data rate communication among different subscribers. Jalali discloses a system that includes a plurality of different connections between a plurality of receivers and plurality of transmitters (see Figure 1). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to adapt some connections to operate at a different data rate than others. Also, it would have been obvious to include connections between a plurality of receivers and a plurality of transmitters through the use of an array of antennas at a base station and multiple mobile stations. One of ordinary skill in the art would have been motivated provide variable data rates to maintain efficient use of resources when different subscriber stations have different bandwidth requirements. One of ordinary skill in the would also have been motivated to include the plurality of connections between receivers and transmitters in order to reduce intra cell interference through the use of beamforming.

Regarding claim 2, Marchetto discloses a transmitter sending a pilot symbol in a frame to a receiver, and at the receiver determining from the frame the characteristics of the channel for the connection and generating channel information. Marchetto also discloses sending the channel information to the transmitter for use in transmissions to the receiver (col. 1, line 65 – col. 2, line 24).

Regarding claim 3, Marchetto discloses optimizing delivery of subsequent communications (col. 2, lines 20-24).

Regarding claim 4, Marchetto discloses repeating the adapting after a predetermined timeout (col. 6, lines 28-39).

Regarding claim 5, Marchetto discloses adapting the transmission rate in between transmissions (col. 5, 21-24), which represents a frame transmission recovery.

Regarding claim 6, Marchetto discloses repeating the adapting in response to an indication from the receiver (col. 5, 21-27).

Regarding claim 7, Marchetto discloses adapting due to a change in the number of bit errors occurring in transmissions to the receiver (col. 2, lines 11-16)

Regarding claim 8, Marchetto disclose that the data rate may be the maximum data rate (col. 5, lines 13-21).

Regarding claims 17 and 18, Marchetto discloses a transmitter sending a pilot symbol in a frame to a receiver, and at the receiver determining from the frame the characteristics of the channel for the connection and generating channel information. Marchetto also discloses sending the channel information to the transmitter for use in transmissions to the receiver (col. 1, line 65 – col. 2, line 24).

4. Claims 10-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al. (US 5,914,959) in view of Myers et al. (US 6,216,244) and Jalali (US 6,778,507).

Regarding claim 10, Marchetto discloses a receiver sending an indication of the data rate, or signal constellation, to a transmitter so that the data will be transmitted from the transmitter to the receiver at a rate that insures reception (col. 5, lines 42-47). In this embodiment, the signal constellation represents the channel map of the present invention, and the indication of that signal constellation represents the channel map index of the present invention. Marchetto also

discloses sending constellation information, representing the channel map index, in a transmission from the transmitter to the receiver (col. 6, lines 17-28). Marchetto fails to expressly disclose transmitting data across a plurality of different connections between any of a plurality of transmitters and any of a plurality of receivers, and that the encoding and modulating for at least some carriers differs from that used for at least some other carriers. Myers discloses using different encoding and modulation for different carriers (col. 3, lines 49-61; see also Figure 4). Jalali discloses a system that includes a plurality of different connections between a plurality of receivers as well as a plurality of transmitters (see Figure 1). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use different encoding and modulation for different carriers in the invention of Marchetto. Also, it would have been obvious to include connections between a plurality of receivers and a plurality of transmitters through the use of an array of antennas at a base station and multiple mobile stations. One of ordinary skill in the art would have been motivated provide different encoding and modulation in order to equalize gain differences based on distances of mobile units to a base station. One of ordinary skill in the would also have been motivated to include the plurality of connections between receivers and transmitters in order to reduce intra cell interference through the use of beamforming.

Regarding claim 11, Marchetto discloses a system data frame (col. 3, lines 10-21), which represents the frame control field of the present invention.

Regarding claim 12, Marchetto discloses using a channel map index, but fails to expressly disclose using the same channel map index at more than one receiver. Myers discloses areas within a cell wherein the encoding and modulation rate is the same (see Figure 2). At the

time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the same channel map index for more than one connection. One of ordinary skill in the art would have been motivated to do this in order to provide two different connections within a particular sector of a cell with the appropriate encoding and modulation information for that sector.

Regarding claim 19, Marchetto discloses a transmitter sending a pilot symbol in a frame to a receiver, and at the receiver determining from the frame the characteristics of the channel for the connection and generating channel information. Marchetto also discloses sending the channel information to the transmitter for use in transmissions to the receiver (col. 1, line 65 – col. 2, line 24).

5. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetto et al. (US 5,914,959) in view of Myers et al. (US 6,216,244) and Jalali (US 6,778,507) as applied to claims 10-12 above, and further in view of Petry et al. (US 6,538,985).

Regarding claim 13, Marchetto in view of Myers and Jalali fails to expressly disclose that the channel is a power line. Petry discloses an OFDM protocol that is compatible with Ethernet, which is used as a wired technology (col. 4, lines 1-6). Ethernet represents a technology wherein the channel is a power line, as in the present invention. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a power line as a channel. One of ordinary skill in the art would have been motivated to do this to support the system of Marchetto in view of Myers and Jalali in a variety of types of communication systems.

Regarding claim 14, Marchetto in view of Myers and Jalali fails to expressly disclose using OFDM. Petry discloses a MAC protocol for a local area network using orthogonal frequency division multiplexing (OFDM) (col. 2, lines 54-56). As is well known in the art, multiplexing techniques are used to allow multiple users to share a communication channel. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use OFDM in the system provided by Marchetto in view of Myers and Jalali. One of ordinary skill in the art would have been motivated to use OFDM in order to multiplex a number of receivers onto a channel for communication with a transmitter.

## *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication, or earlier communications from the examiner should be directed to Thomas Volper whose telephone number is (571) 272-3151. The examiner can normally be reached between 8:30am and 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached at (571) 272-3155. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Thomas E. Volper

TEV

September 30, 2004

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600